

# Orthobiologics: Undervalued or Money Pit?

Michael Khadavi, MD, RMSK



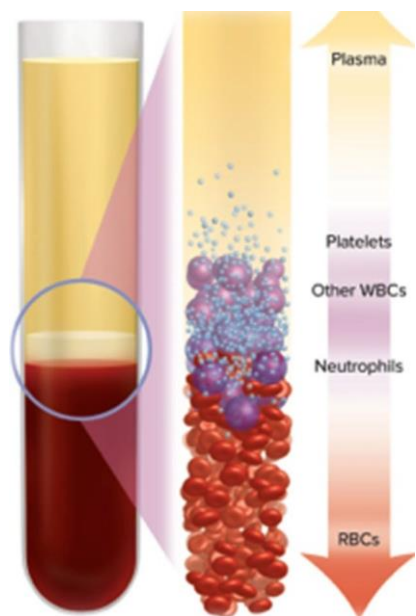
# Case 1:

- **45yo M laborer, LBP from lifting in June 2020**
- **PT x 6 wks, 3 ESI's, Neurosurgeon**
- **15lb lift (no light duty)**

## Case 1: cont'd

- Feb 2021 neurosurg refers to me for “MMI”
- LBP worse with sitting and FF
- No radicular pain. Never had it.
- MRI:









PRP



# **Intradiscal Injection of Autologous Platelet-Rich Plasma Releasate to Treat Discogenic Low Back Pain: A Preliminary Clinical Trial**

Koji Akeda<sup>1</sup>, Kohshi Ohishi<sup>2</sup>, Koichi Masuda<sup>3</sup>, Won C. Bae<sup>4</sup>, Norihiko Takegami<sup>1</sup>,  
Junichi Yamada<sup>1</sup>, Tomoki Nakamura<sup>1</sup>, Toshihiko Sakakibara<sup>5</sup>, Yuichi Kasai<sup>5</sup>, Akihiro Sudo<sup>1</sup>

- n=14
- VAS: 7.5→3.2→2.9 (pre/6mo/12mo)
- RDQ: 12.6→3.6→2.8 (pre/6mo/12mo)

## Case 2:

- **55yo deliverer with right anterior elbow pain**
- **Presents to Elbow Surgeon: distal biceps tendon partial tear**
- **5lb lift**
- **6 wks PT**
- **MRI→distal biceps partial tear**
- **Surgery vs Orthobiologics →refers to me**

## Case 2: Cont'd

- **Explain risks and benefits of BMC, and that PRP unlikely to fix the tear**
- **2wks later: BMC injection to distal biceps tendon**
- **3 mo post-procedure: release at MMI, FULL DUTY**



Wow, orthobiologics can really work.  
Do they always work this well?

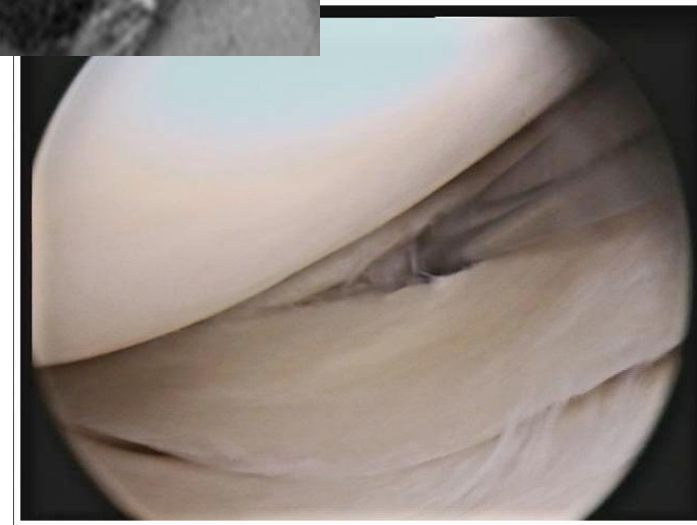
- **Tendon ligament tear is too large**
- **Cartilage/meniscus tear**
- **Osteoarthritis is too severe**
- **Lumbar facet joints**

## Case 3:

- **38yo M twists knee coming off ladder**
- **6 wks PT → MRI—meniscus tear → referred to “stem cell doctor” who performs PRP...**
- **3 mo later he’s no better. Still can’t extend his knee.**

## Case 3:

- Referred to me
- Quickly refer to Dr. McCabe
- Arthroscopic meniscus repair
- 3.5 mo later → MMI and full duty
- BEST PART: we kept his meniscus!



## Case 4:

- 38yo delivery driver, LBP
- Sent to “stem cell dr” → BMC facet joints, sacroiliac joint, and epidural prp. \$11,000
- 3 mo later → no better
- LBP worse with sitting/FF



## Case 4: Cont'd

- **Call NCM and explain disc tear, intradiscal PRP**
- **Adjuster won't approve ANOTHER orthobiologic proc**
- **I place at MMI**
- **Orthobiologics would have helped...if we had injected into the right place!**

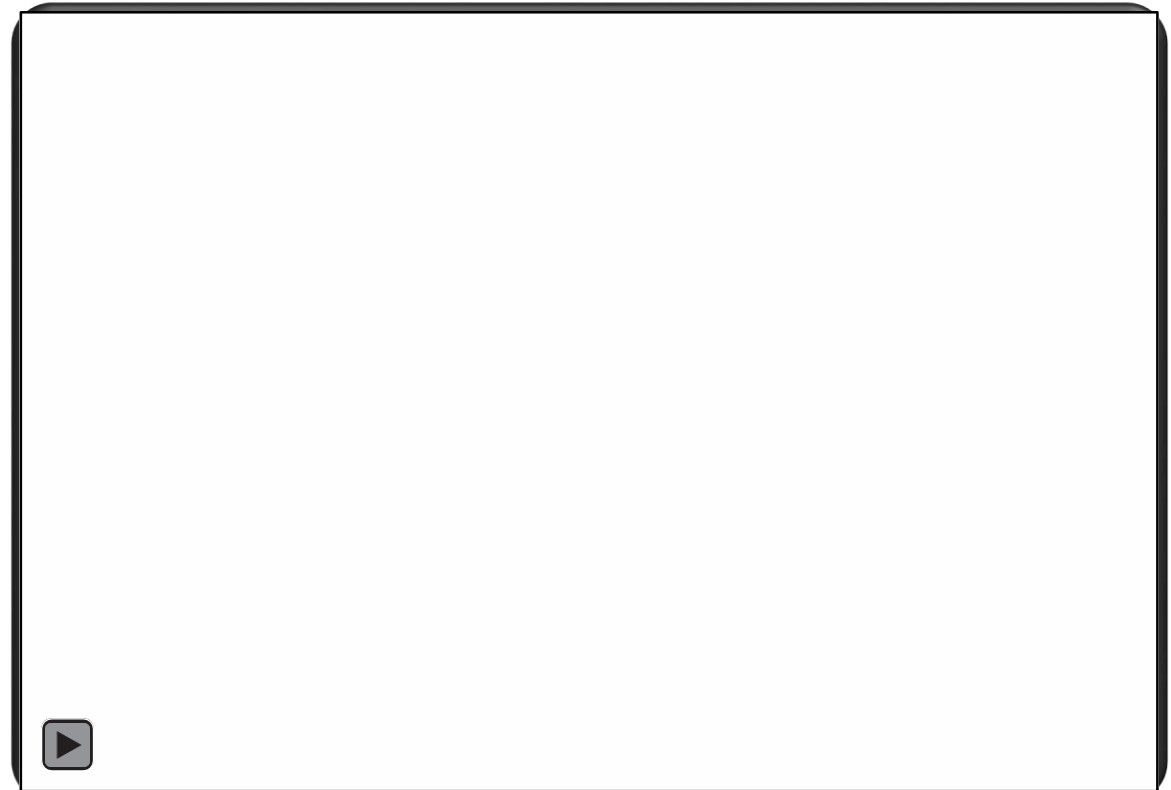


*“Oh that PRP is experimental”*

# EVIDENCE

# PRP for tendinopathy

- 37 Level 1 RCT's
- Rot Cuff, Lat Epi, Hamstring Tendinopathy, plantar fasciitis
- Achilles, patellar tendon
- Variability in PRP

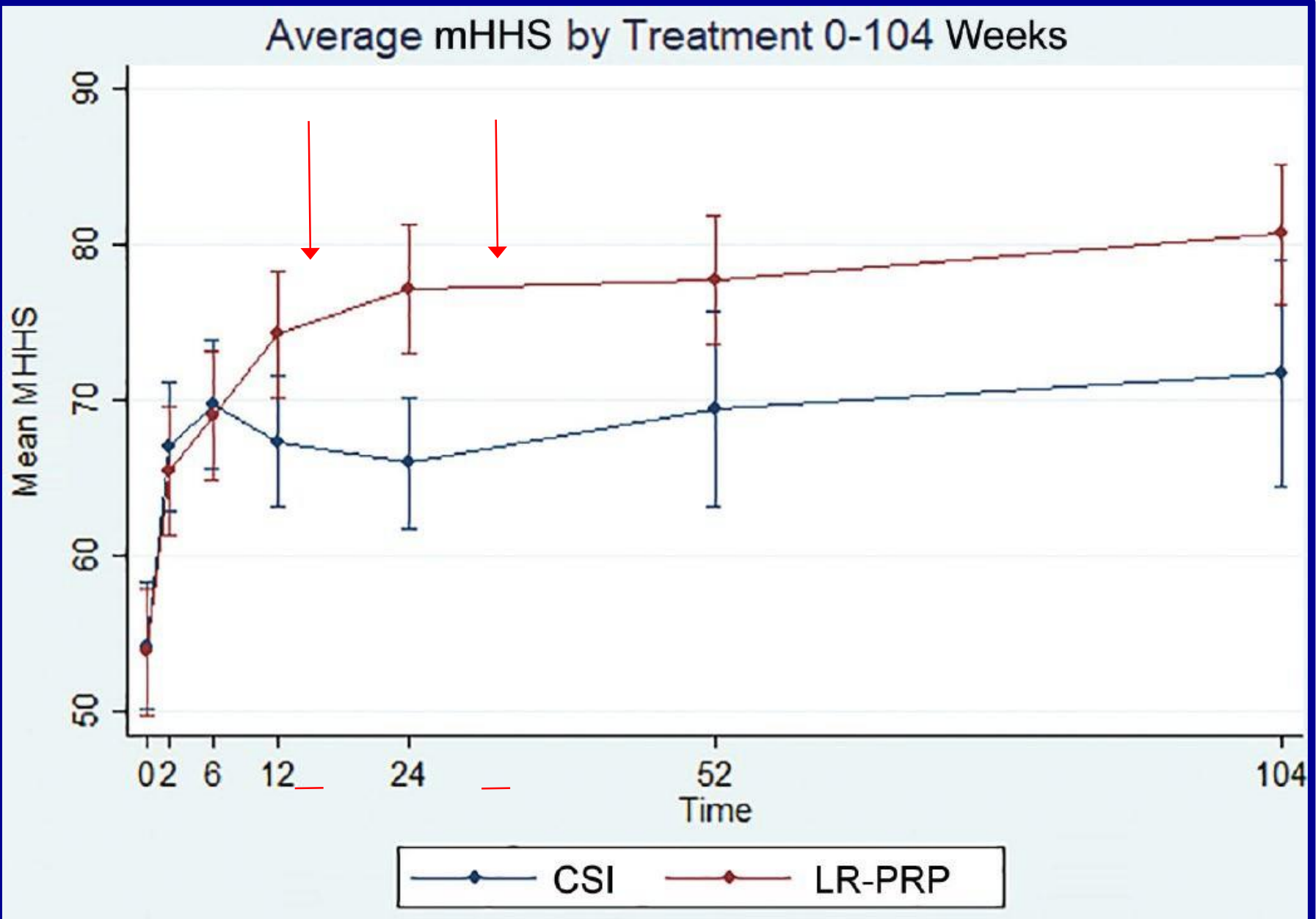


PRP Common Ext Tendon

Leucocyte-Rich Platelet-Rich  
Plasma Treatment of Gluteus Medius  
and Minimus Tendinopathy

A Double-Blind Randomized Controlled Trial  
With 2-Year Follow-up

Jane Fitzpatrick,<sup>\*,†,§</sup> PhD, MBBS, FACSEP, Max K. Bulsara,<sup>||</sup> PhD,  
John O'Donnell,<sup>¶</sup> FRACS, MBBS, and Ming Hao Zheng,<sup>\*,\*\*</sup> PhD, DM, FR  
*Investigation performed at the University of Western Australia, Crawley, A*



# LP-PRP and knee OA

Cerza 2012 AJSM	I	120	Soft Spin x 1 px2.5, + ACDA	6mo	4	I-III	Superior Outcome PRP Versus HA especially in KL III
Sanchez 2012 Arthroscopy	I	176	Hard Spin x 1 ACDA, CaCl	6mo	3	I-III	Superior Outcome PRP Versus HA
Hart 2013 <i>Arch Orthop Trauma Surg</i>	I	100	x2.5	12mo	9		Superior Outcome PRP Versus Placebo
Patel 2013 AJSM	I	156	Med Spin x1 x3, ACDA	6mo	1/2	I-II	3 Groups: Saline, I PRP, II PRP PRP superior, No difference bt I/II
Say 2013 ACTA Cech	II	90	Hard Spin x 1 ACDA,CaCl	6m0	3		Superior Outcome PRP Versus HA
Vaquerizo '13 Arthroscopy	I	96	Hard Spin x 1 ACDA, CaCl	12mo	3	II-IV	3 PRP vs 1 HA PRP superior at 12 months
Smith 2016 AJSM	I	60	Soft Spin x 1 px2.5, ACDA	12mo	3	II-III	Superior Outcome Versus Saline FDA Observed Study
Cole 2017 AJSM	I		Soft Spin x 1 px1.7, ACDA	12mo	3		Superior Outcome PRP Versus HA in Most Outcome Measures

Slide courtesy  
of Dr. Adam  
Anz



# PRP vs BMC

- **BMC >>>PRP** for tenocyte differentiation
  - BMC for tendon tears or greater chronicity
- Osteoarthritis: more IRAP, younger more anti-inflammatory platelets, MSC
  - more chronic/severe

Jason Dragoo, Unpublished Data

Cassano 2018

Ziegler 2019

Machlus 2013

Dregalla 2020

## Subchondral stem cell therapy versus contralateral total knee arthroplasty for osteoarthritis following secondary osteonecrosis of the knee

Philippe Hernigou<sup>1</sup> • Jean Charles Auregan<sup>1</sup> • Arnaud Dubory<sup>1</sup> • Charles Henri Flouzat-Lachaniette<sup>1</sup> • Nathalie Chevallier<sup>1</sup> • Helene Rouard<sup>1</sup>

- 30 c BL knee ON (n=60)
- Randomized TKA vs BMC/IOBP
- 12yr mean f/u (8-16yr)
- BMC>TKA



# Benefits in WC

- **MAY lead to quicker MMI**
- **MAY lead to full duty**
- **For soft tissue--Unlike cortisone, effect is long-term**
- **Patient knows they're getting top-notch care**
- **Not expensive in the work comp world**
- **NEARLY RISK-FREE**

# Disadvantages in WC

- **some areas still are not well studied**
- **Some conditions are studied, but poor outcomes**
  - **Achilles/pat tendon**
  - **Larger pathology**
- **PRP for tendon tears—usually not enough (BMC or surgery)**

# Best applications of Orthobiologics

- Discogenic LBP (SYMPTOMATIC annular tear)
- Tendinosis and small partial tears (distal biceps tendon, rotator cuff, lateral epicondylitis, etc)
- Post-surgical tendon repair
- Cannot have steroid or surgery (DM, cardiac)
- Osteoarthritis in <65yo or cannot get arthroplasty





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# ORTHOBIOLOGICS

